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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
09/099,898	06/18/98	FRANZ-BACON K	DX0744K

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EDWIN P CHING
DNAX RESEARCH INDTITUTE
901 CALIFORNIA AVENUE
PALO ALTO CA 94304-1104

EXAMINER	
DRAPER, G	
ART UNIT	**PAPER NUMBER**
1647	4

DATE MAILED: 07/28/00

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☒ Responsive to communication(s) filed on Election 9/13/99

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1 - 18 is/are pending in the application.
Of the above, claim(s) 1-10, 18 is/are withdrawn from consideration.
☐ Claim(s) _____ is/are allowed.
☒ Claim(s) 11-17 is/are rejected.
☐ Claim(s) _____ is/are objected to.
☒ Claim(s) 1 - 18 were are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
☐ The specification is objected to by the Examiner.
☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.
☐ received in Application No. (Series Code/Serial Number) _____.
☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of Reference Cited, PTO-892
☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
☐ Interview Summary, PTO-413
☐ Notice of Draftperson's Patent Drawing Review, PTO-948
☐ Notice of Informal Patent Application, PTO-152

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

★ U.S. GPO: 1998-404-496/40517

1. Part III: Detailed Office Action

The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 1647.

2. Restriction Requirement:

Applicant's election of Group VI, claims 11-17 in Paper No. 8 of 9-13-99 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Applicants comments about possible rejoinder of claims and the format of the claims have been noted.

Based on this election and because some of the claims recite products or methods that fall into multiple groups (see the written restriction and the comments therein), the claims will be examined to the extent that they are directed to the elected invention.

3. Formal Matters:

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the elected invention to which the claims are directed. The following title or the like is suggested: "DNA ENCODING THE C23 POLYPEPTIDE"

4. Objections and 35 USC 112 Rejections:

4a. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. There are various aspects to this rejection.

First of all the claims are indefinite and incomplete for depending from a non-elected claims. Therefore, the claims should be amended (especially claim 11) to put them in independent form. The claims are further indefinite and incomplete for failing to be self-contained in referring to the sequence in the Table. All sequences should be referred to by the Sequence Identifier as required by 37 CFR 1.821. Therefore, reference to a table should be replaced with the sequence identifier.

Claims 11 is indefinite and incomplete for failing to define the encoded protein, because the reference to "said C family protein" is not definitive. Part "ii" of claim 11 is also indefinite and confusing in the limitation for a "plurality of antigenic peptides" because it is not clear if applicants merely intend for this to mean several different peptide, if there is a relationship between the peptides, if the plurality of peptides are linked or joined together, or if separate but different peptides are intended. Clarification and correction is requested.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 11 recites the broad recitation "less than 6kb" and

"mammal," but the claim also recites "preferably less than 3kb" and "including a primate" which is the narrower statement of the range/limitation.

Claims 14 and 17 are indefinite in the alternative use of "and/or", because it is not clear what controls which of these limitations. Claim 15 is also indefinite and incomplete for failing to recite sufficient methods step, because "contacting" is not sufficient descriptive of the method and what is to be achieved.

The claims are prolix, because they contain long recitations or unimportant details which hide or obscure the invention, or that the recitation of very long detailed claims setting forth so many elements that invention cannot possibly reside in the combination should be rejected as prolix [See *Ex parte Iagan,* 1911 C.D. 10, 162 O.G. 538 (Comm'r Pat. 1910); and *In re Ludwick*, 4 F.2d 959, 1925 C.D. 306, 339 O.G. 393 (D.C. Cir 1925) respectively].

Additionally, the format of many of the claims (see claim 9) comprise double inclusion of an element in members of a Markush groups, where there is overlapping members for alternatives recited in a claim's Markush groups, or where the claim can be read to include the same element twice [For support see *Ex parte White*, 759 O.G. 783 (Bd App 1958; *Ex parte Clark*, 174 UPSQ 40 (Bd App. 1971; *Ex parte Kristensen*, 10 USPQ2d 1701 (Bd. Pat. App. & Inter. 1989)] This causes the claims to be objectionable and indefinite.

The claims represent undue multiplicity/an unreasonable number of claims or claim limitations, that are unreasonable in view of the nature and scope of applicants's invention and the state of the art, inasmuch as it relates to confusion of the issue. The Examiner recognizes that there may not be a large number of claims, but this is because applicants have chosen to combined many of these distinct products and/or limitations/embodiment into one claims. However, the issue is still the same, which makes this consistent with the CCPA's position set forth in In re Chandler, 254 F.2d 396, 117 USPQ 361 (1959) and In re Chandler, 319 F.2d 211, 225, 135 USPQ 138, 148 (1963) where it was held that applicant's latitude in stating their claims in regard to number and phraseology employed "should not be extended to sanction that degree of

repetition and multiplicity which beclouds definition in a maze of confusion"). Furthermore, such claims, or claim limitations or permutations could be rejected one over the other if they differ only by subject matter old in the art (*Ex parte Whitelaw*, 1915 C.D. 18, 219 O.G. 1237 (Comm'r Pat. 1914), where this doctrine is applied when the claims are unduly multiplied or are substantial duplicates (*Ex parte Kochan*, 131 USPQ 204, 206 (Bd. App. 1961).

Claims 14 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements and/or steps are those that show a physical features to or other elements to satisfy the limitations for a proper kit. Although the preamble refers to a "kit" there are insufficient elements to distinguish this claims from claim 8 because the limitation for instruction is vague and does not constitute a further or distinguishing limitation. In this present format, claim 10 appears to be a substantial duplicate of claim 11 (see the comments in the preceding paragraph)

4b. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 11- 15 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the nucleic acids that encodes for the mature protein and possibly limited modifications, does not reasonably provide enablement for nucleic acids that encode for any antigenic peptide sequence or plurality of sequences (relative to plurality of sequences see the above comments). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use with a reasonable expectation of success the invention that is commensurate in scope with these claims.

First it is pointed out that claims are directed to the elected invention for nucleic acids, but in claim 11, the nucleic acids are defined in terms of the encoded protein or peptide sequence, thus the rejections applies for enablement of any encoded antigenic peptide.

Although the nucleic acid is defined in terms of encoded portions, small pieces or antigenic fragments, the exact make-up and nature of these various encoded portions, small pieces or fragments has not been set forth or enabled by the specification, and it is not clear of these have to represent contiguously encoded residues of the mature protein. Furthermore, the claims fail to recite any other characteristic such as functional limitations that would more precisely define the encoded portions, small pieces or fragments, that would enable the skilled artisan to obtain these various portions, small pieces or fragments with a reasonable expectation that they will possess the desired properties.

The specification makes general reference to antigenic fragments (presumably from proteolytic cleavage or chemical synthesis if the encoded protein); however, this does not serve to enable the scope of the claims. The skilled artisan would be faced with an undue amount of experimentation for determining how long the encoded portions, small pieces or fragments must be; from what region/ portions, small pieces or fragments on the encoded protein the portions, small pieces or fragments covers, represents or corresponds to; does the encoded portions, small pieces or fragments have to represent a contiguous string of amino acid residues on the encoded protein's structure; because knowledge of these variables with assurances that the encoded portions, small pieces or fragments is biologically active in order to satisfy the requirements for enablement. Furthermore, the claims do not set forth any specific encoded portions that is identified by their size, specifically encoded amino acids residues, nor to the specific region on the protein that this encoded portions, small pieces or fragments corresponds to (e.g. the N- or C-terminal regions; if it is an encoded portions, small pieces or fragments from an internal region of the protein and what this specific portions, small pieces or fragments is).

Applicants can not merely rely on the issue of "make and test" to satisfy the enablement provisions for the breadth of the encoded portions, small pieces or fragments and/or contiguous residues presented in the claims. Rather, the skilled artisan would need to necessarily know how to make and use the specific encoded portions, small pieces or fragments with reasonable assurance that the encoded portions, small pieces or fragments would possess the desired activity and can be usable as such. In a likewise manner, there are limited structure/function studies provided of record for the encoded protein which, if present, would serve to enable the scope of the encoded portions, small pieces or fragments or contiguous residues. Thus, the skilled artisan is without guidance for determining if the contemplated contiguous amino acids have to represent certain functionally active regions and where such specific nucleic acids are that would encode for such things as the binding regions, and there is it is a lack of enablement and guidance for where usable epitopic/antigenic regions are from the encoded nucleic acids; and for whether the portions, small pieces or fragments or and/or contiguous regions correspond to regions of thermal or enzymatic activity, or other stability encoded regions; and there is a lack of enablement for the necessity of the nucleic acids that encode for the N-and C-terminals and a clear lack of teachings for how this is determined.

The specification is devoid of such things as antigenic index (via Jameson-Wolf), α and β turns/regions (via Garnier-Pobson, Chou-Fasman or Eisenburg); coil regions; hydrophilic, hydrophobic and amphipathic regions (via Kyte-Doolittle, Hopp-Woods or Eisenberg); flexible region (via Karplus-Schulz); surface probability (via Emini), and antigenic or epitopic regions or any other things of this nature that would serve to clearly identify and enable nucleic acids that would encode for antigenic peptides. In the absence of this, the specification has not provided sufficient evidence or examples or guidance to ensure that these encoded regions are even antigenic in nature and sufficient to elicit an antibodies response.

While it well settled that a specification need not contain examples in order to be enabling, however, in the express absence of such, the specification must provide enablement alternatively

in the form of evidence or guidance. It is also known and accepted that examples, evidence of guidance are not required if, on its face, it is clear to the skilled artisan that the claims are enabled; and when there is no reason to question the objective truths of applicant's mere statement of assertions that the DNA that defines the various encoded protein portions, small pieces or antigenic peptides or and/or contiguous regions are enabled by the specification. In addition to there being insufficient examples, the specification is also devoid of sufficient evidence or guidance that would serve to enable the claims. For example, at various pages of the specification, applicant have merely set forth general statements about variants, encoded polypeptides and modification, fragmentation, antigen, or biological activity of the full length encoded protein; and have cited general teaching reference that appear to merely represent "boiler plate" teaching for how to achieve such modifications. However, what is not taught is the nexus or relation that these would have to the various modified and encoded amino acids and the resulting functionality of the encoded protein that would serve to enable the full scope of the claims for how to make and use these various portions, small pieces or fragments of the nucleic acids that would encode for any and every conceivable portions, small pieces or fragments of the protein without having to encounter undue experimentation.

For instance, even though applicants have provided the nucleic acid and amino acid sequence for their protein, and have further concluded that the biological properties associated with this presumably novel and encoded protein would be similar to that of other proteins, there are limited structure/function studies that would lead the skilled artisan to the region or specifically encoded amino acid residues that are responsible for a certain functional activity or a functional activity that could be usable, while still possessing the desired activity. Furthermore, while the structural identity of the novel protein may be similar to other known proteins, this amounts to limited homology, and the mere existence of structural similarity does not, in and of itself, always equate to the same or similar functional activity. In fact, it known that there could exist drastic differences in the functionality of structurally-similar proteins. Further, in the

absence of these structure/function studies for the encoded protein and certainly for the encoded portions, small pieces or fragments regions, the skilled artisan would not know, absent sufficient examples, evidence or guidance, where to start selecting residues and how long the regions would have to be to obtained the scope of the claims with assurance that they are functionally active and usable regions. In view of all of the above, the skilled artisan would encounter undue experimentation to achieve the scope of these claims, because there also does there appear to be a sufficiently established and reproducible assay for determining the biological activity that applicants desire to be associated with the encoded protein portions, small pieces or fragments and/or contiguous regions.

Since there is insufficient enablement for where nucleic acids that would encode for the biologically active regions or antigenic peptide regions are, it would be difficult to determine what specific functional activity on the protein these portions, small pieces or fragments or contiguous amino acids cover since many protein possess multiple biological activities. All of these variables would have to be known for the skilled artisan to produce nucleic acids for the encoded portions, small pieces or fragments and/or contiguous encoded regions that possess the desired properties and therefore be usable in a manner contemplated. Without such information, the skilled artisan would have to resort to trial-and-error and be faced with undue experimentation for making and using the full scope of these portions, small pieces or fragments based on the limited characterization set forth in the specification, as well as the limited characterization that has been set forth in the claims for the portions, small pieces or fragments and/or contiguous.

The specification fails to teach what specific residues of the encoded amino acid sequence the activity corresponds to for either the portions, small pieces or fragments or the contiguous regions, because applicants have merely provided a definition for "antigenic peptide" and recited very general and non-specific way of obtaining the claimed portions, thus, based on all of the other reasons set forth above the artisan would encounter undue experimentation in order to practice the scope of these claims. In the absence of specific examples, in order to satisfy the

enablement provision to support the scope of the claims, alternatively, applicants should provide evidence and/or guidance to enable the scope of these portions, small pieces or fragments. But the specification is devoid of such teachings as well. So, in the absence of such, the skilled artisan would be faced with undue experimentation for trying to determiner how and where to start to make the full scope of the polynucleotides to encode for portions, small pieces or fragments and/or contiguous amino acids as recited by the claims. Enablement for the claims can not merely be perfected by the general reference to cleaving the protein from one or both ends to obtain a biologically protein. There must be some guidance, the establishment of a nexus or a reasonable degree of predictability about where these regions are and how to obtain the various portions, small pieces or fragments and/or contiguous region of sufficient size that could be used for its intended purpose.

6. Prior Art Rejections:

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11 and 16-17 are rejected under 35 U.S.C. 102(a) or (b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Adams et al (Accession No AA311223) of Hillier et al (Accession No. N41594).

Based on the format of the claims as stated above, the art is being applied based on a reasonable interpretation of what is intended or encompassed by the claims. Each of the prior art sets forth a human sequence that shows substantial similarity to a portion of the nucleic acid for the instant protein. Based on the amount of identity between the prior art and claimed sequence, the prior art would meet the limitation of claims 16-17 because the skilled artisan would reasonably expect that the prior art seqeunce would hybridize to that of the claims, even under the specified conditions. Thus, the prior art appears to anticipate portions of the claims, and the burden is upon applicants to establish a patentable difference (see In re Best, 195, USPQ 430).

7. Applicants are advised to make the necessary amendments to the claims to obviate the various rejections, because a preliminary report suggest that there may be a potential interference.

8. Advisory Information:

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to **Garnette D. Draper, Art Unit 1647, whose telephone number is (703) 308-4232.** Examiner Draper can normally be reached Monday through Friday, 9:30 A.M. to 6:00 P.M.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist at telephone number (703) 308-0196.

Certain papers related to this application may be submitted to Technology Center 1600 by facsimile transmission. Papers should be faxed to Technology Center 1600 via the PTO Fax Center located in Crystal Mall 1 (CM1). The faxing of such papers must conform with the notices published in the Official Gazette, 1156 OG 61 (November 16, 1993) and 1157 OG 94 (December 28, 1993) (see 37 C.F.R. § 1.6(d)). NOTE: If Applicant *does* submit a paper by fax, the original signed copy should be retained by applicant or applicant's representative. **NO DUPLICATE COPIES SHOULD BE SUBMITTED** so as to avoid the processing of duplicate papers in the Office.

Official papers filed by fax should be directed to (703) 308-4242. Faxed draft or informal communications with the examiner should be directed to (703) 308-0294. **Please** advise the Examiner at the telephone number above when an informal fax is being transmitted.

GARNETTE D. DRAPER
PRIMARY EXAMINER
GROUP 1800